

WHAT IS CLAIMED IS:

1. A printhead for delivering solvent free materials to a receiver comprising:

a first discharge device having an inlet and an outlet, a portion of the first discharge device defining a first delivery path, a portion of the first discharge device being adapted to be connected to a pressurized source of a thermodynamically stable mixture of a fluid and a first marking material at the inlet, the first discharge device being configured to produce a shaped beam of the first marking material, the fluid being in a gaseous state at a location beyond the outlet of the first discharge device;

a first actuating mechanism positioned along the first delivery path, the first actuating mechanism having a first position removed from the first delivery path and a second position in the first delivery path; and

a second discharge device having an inlet and an outlet, a portion of the second discharge device defining a second delivery path, a portion of the second discharge device being adapted to be connected to a pressurized source of a thermodynamically stable mixture of a fluid and a second marking material at the inlet, the second discharge device being configured to produce a diverging beam of the second marking material, the fluid being in a gaseous state at a location beyond the outlet of the second discharge device.

2. The printhead according to Claim 1, a second actuating mechanism positioned along the second delivery path, the second actuating mechanism having an open position and a closed position.

3. The printhead according to Claim 1, wherein the first discharge device includes a variable area section.

4. The printhead according to Claim 3, wherein the first discharge device includes a constant area section.

5. The printhead according to Claim 1, wherein the first discharge device includes a first variable area section connected to one end of a first constant

area section, and a second variable area section connected to another end of the first constant area section.

6. The printhead according to Claim 1, wherein the first actuating mechanism includes a solenoid actuating mechanism.

7. The printhead according to Claim 6, wherein the solenoid actuating mechanism is actuatable at a plurality of frequencies.

8. The printhead according to Claim 1, wherein in the first marking material is an ink.

9. The printhead according to Claim 8, wherein in the first marking material includes a dye.

10. The printhead according to Claim 8, wherein the first marking material includes a pigment.

11. The printhead according to Claim 1, where in the second marking material is an overcoat material.

12. The printhead according to Claim 11, wherein the second marking material is an organic material.

13. The printhead according to Claim 11, wherein the second marking material is an inorganic material.

14. The printhead according to Claim 1, wherein the second marking material is a precoat material.

15. A method of printing comprising:
providing a pressurized source of a thermodynamically stable mixture of a solvent and a marking material;

providing a discharge device having an inlet and an outlet, a portion of the discharge device defining a delivery path, a portion of the discharge device being adapted to be connected to a pressurized source of a thermodynamically stable mixture of a fluid and a marking material at the inlet;

causing the discharge device to produce a first shaped beam of the marking material, the fluid being in a gaseous state at a location beyond the outlet of the discharge device; and

causing the discharge device to produce a second shaped beam of the marking material, the fluid being in a gaseous state at a location beyond the outlet of the discharge device.

16. The method according to Claim 15, further comprising:

providing a receiver positioned at a first predetermined distance from the outlet of the discharge device.

17. The method according to Claim 16, wherein causing the discharge

device to produce a shaped beam of the marking material includes delivering the marking material to the receiver positioned at the first predetermined distance to create a printed area on the receiver having a first size.

18. The method according to Claim 16, further comprising:

moving the receiver to a second predetermined distance from the outlet of the discharge device.

19. The method according to Claim 18, wherein causing the discharge

device to produce a shaped beam of the marking material includes delivering the marking material to the receiver positioned at the second predetermined distance to create a printed area on the receiver having a second size.

20. The method according to Claim 15, wherein causing the discharge

device to produce a first shaped beam of the marking material includes delivering the marking material at a first mass flow rate.

21. The method according to Claim 20, wherein causing the discharge device to produce a second shaped beam of the marking material includes delivering the marking material at a second mass flow rate.

22. The method according to Claim 21, wherein the second mass flow rate is greater than the first mass flow rate.

23. The method according to Claim 15, wherein causing the discharge device to produce a second shaped beam of the marking material includes delivering the marking material at a second mass flow rate.

24. The method according to Claim 15, wherein the first shaped beam is a collimated beam.

25. The method according to Claim 15, wherein the first shaped beam is a focused beam.

26. The method according to Claim 15, wherein the second shaped beam is a diverging beam.

27. The method according to Claim 15, wherein causing the discharge device to produce a first shaped beam of the marking material includes providing a first discharge device configured to produce the first shaped beam of the first marking material.

28. The method according to Claim 27, wherein causing the discharge device to produce a second shaped beam of the marking material includes providing a second discharge device configured to produce the second shaped beam of the second marking material.

29. A printing apparatus comprising:
a pressurized source of a thermodynamically stable mixture of a fluid and a marking material;

a printhead, portions of the printhead defining a delivery path, the delivery path of the printhead being connected to the pressurized source, the printhead including a discharge device, the discharge device having an outlet, a portion of the discharge device being positioned along the delivery path, the discharge device being shaped to produce a shaped beam of the marking material, the fluid being in a gaseous state at a location beyond the outlet of the discharge device;

an actuating mechanism positioned along the delivery path, the actuating mechanism having an open position at least partially removed from the delivery path; and

a receiver retaining device moveably positioned a predetermined distance from the outlet of the discharge device.

30. The printing apparatus according to Claim 29, portions of the printhead defining a second delivery path, wherein a second discharge device is positioned along the delivery path, the second discharge device being shaped to produce a second shaped beam of a marking material.